

Monte Carlo codes provide an effective means of modeling three dimensional radiation transport; however, their use is both time- and resource-intensive. The creation of a lookup table or parameterization from Monte Carlo simulation allows users to perform calculations with Monte Carlo results without replicating lengthy calculations. FLUKA Monte Carlo transport code was used to develop lookup tables and parameterizations for data resulting from the penetration of layers of aluminum, polyethylene, and water with areal densities ranging from 0 to 100 g/cm<sup>2</sup>. Heavy charged ion radiation including ions from Z=1 to Z=26 and from 0.1 to 10 GeV/nucleon were simulated. Dose, dose equivalent, and fluence as a function of particle identity, energy, and scattering angle were examined at various depths. Calculations were compared against well-known results and against the results of other deterministic and Monte Carlo codes. Results will be presented.